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Abstract

This paper develops a self-enforcing contract model to show that better economic fundamentals can help when there is weak rule of law—but with order—to attract foreign direct investment, whereas lowering taxes does not necessarily help. Using a cross-region Chinese dataset, the analysis finds evidence consistent with the theoretical analysis. Regional variations in tax rates and the perceived quality of formal contracting institutions are not correlated with regional inflows of foreign direct investment, but leadership characteristics are. Most conventional economic factors have the predicted effects on foreign direct investment. The finding that foreign direct investment is lower in locations where domestic private firms have better access to finance and where the air quality is poor is new to the literature.

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Foreign Direct Investment under Weak Rule of Law: Theory and Evidence from China[1]

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Key words: FDI, rule of law, China, institutions, implicit contract, leadership, economic performance.

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1. Introduction

China is known for its lack of rule of law and weak property rights institutions (Allen, Qian, and Qian 2005). Nevertheless, China has become the world's number one destination for foreign direct investment (FDI), and that, at least to some observers, is puzzling (Fan, Morck, Xu and Yeung, 2007). It is true that China is a big country, and its number one position in the total amount of FDI is less surprising once it is divided by 1.3 billion people. However, such a simple division overlooks the great disparities in FDI across Chinese regions. To be more precise, for the 916 Chinese districts[2] in the data sample used in this paper, the average share of foreign equity ownership is 0 for the bottom quarter of districts, the median is 6 percent, for the 90th percentile it is one-third, and the highest share is 100 percent. In other words, some Chinese districts have a very high FDI presence that may be comparable to developed countries. What explains these vast variations? If the rule of law is fundamental to FDI, and given the fact that no Chinese localities have a legal institution remotely close to those in developed countries, what explains the high FDI in these localities?

According to Allen, Qian and Qian (2005), China is a counterexample to the recent literature that links a country's financial development and hence its economic growth to its legal system, especially property rights protection (La Porta, Lopez-de-Silanes, Shleifer, Vishny, 1998; Levine, 1999; Acemoglu, Johnson and Robinson, 2001; Moenius and Berkowitz, 2010). We concur with Allen, Qian and Qian in the sense that the rule of law and a formal system of property rights are apparently not the most essential institutions in explaining FDI inflows within Chinese regions, and that the law and finance literature has overlooked the power of informal

[2] District is the administrative level just below city. In many cases, these districts have the same official rank as a county.

institutions, particularly the mechanism of reputation that has been well studied in the repeated games literature (Mailath and Samuelson, 2006).

Conventional literature on what drives FDI normally ignores the legal/property rights institutions and looks only at economic factors behind FDI decisions. In contrast, the cross country studies of FDI that take institutional factors into account add property rights institutions in an *ad hoc* way as one of the explanatory variables along with other conventional variables on FDI. Both treatments are not entirely satisfactory. In a country where there is a total lack of property rights protection, very few companies would want to invest in that country even if it may enjoy large market size, low labor cost and good geography. All these advantages can be taken away by the grabbing hand of the host government. Therefore, what determines FDI inflows in a weak legal environment is not straightforward without rigorous analysis supported by careful empirical analysis. Indeed, if legal institutions are indispensable to FDI, then there should not be as much regional disparity in FDI as we have observed in China (and likely elsewhere).

In this paper, we first construct a simple self-enforcing contract model to analyze the possibility and determinants of FDI in the absence of the rule of law.[3] We then use a large new data set of firm ownership and business environment from a survey conducted by the World Bank and the National Bureau of Statistics in China to study what determines regional variations of FDI in China. Besides the conventional factors that have traditionally been linked to FDI, we will pay particular attention to many less studied factors.

In addition to the literature already mentioned, our paper is closely related to three strands of literature on the determinants of FDI inflow. The first is the surging new literature on

[3] There is a difference between the lack of order (or chaos) and the absence of rule of law. China does not have the rule of law but clearly has order. We thank Yingyi Qian, the editor, for pointing this out to us.

the relationship between institutions and FDI inflow in particular and economic outcomes in general. The literature employing cross-country sample to study FDI has found that key determinants on FDI inflow or effects includes institutional quality and corruption (Wei, 2000; Javorcik and Wei, 2002; Sabirianova, Svejnar and Terrell, 2005; Stein and Daude, 2007; Alfaro, Kalemli-Ozcan and Volosovych, 2008). However, Fan et al. (2009) no longer finds institutions to be robustly related to FDI per capita once one controls for economic track record.

The second strand of literature includes studies on the geographical distribution of FDI in the U.S. or other developed countries and studies on the location of FDI from the U.S. or other developed countries to developing countries. Blonigen (2005) offers a nice summary of this empirical literature across countries. A more relevant part of this strand of literature is the literature on the determinants of FDI inflow across Chinese provinces. It points to the following factors as important: (i) good infrastructure; (ii) a large market; (iii) ethnic link to foreign investors. There is also evidence about the importance of preferential policies, more R&D manpower, or lower wage rate, but the support is considerably weaker (Head and Ries, 1996; Cheng and Kwan, 2000; Dees, 1998; Wei et al., 1999; Hou and Zhang, 2001; Huang and Di, 2004; Huang, 2007). Our paper distinguishes itself from the above papers in several aspects. First of all, we build our empirical investigation on a theoretical analysis of what determines FDI inflows in the absence of the rule of law. Second, our unit of analysis is at the district level instead of the usual country level or province level, and this gives us a much larger sample, which covers 120 Chinese cities and more than 900 districts. Third, we have detailed information on many novel factors that may affect FDI, including local government attributes, banking environment, contracting institutions and the quality of living.

The third literature concerns the role of leadership characteristics and economic development. This literature is sparse, with the most noticeable being Jones and Olken (2005), which find that national leadership quality matters significantly for growth rates. This is true especially in autocratic settings in which the power of leaders is less constrained. We add to this literature with within-country evidence in the largest non-democratic country. We confirm their findings, suggesting that leadership characteristics are of importance of the first order.

The rest of the paper is organized as follows. Section 2 constructs a simple implicit contract model and shows that a country with good economic fundamentals can attract FDI even without the rule of law, and that a location with better economic fundamentals can attract more FDI. Empirical implications from the model are then derived. Section 3 introduces the data, describes the econometric specification, defines the variables, and maps the model's predictions into relevant hypotheses. Section 4 presents the regression results, which largely confirm our predictions. Section 5 summarizes the main findings and offers remarks on the role of the rule of law in the economic growth in transitional or developing economies.

2. A Simple Model of FDI in the Absence of the Rule of Law

We model the rule of law as a government's ability to commit to a tax rate to be enforced by a third party. When the rule of law is absent, the government's announced tax rate is not enforceable by a third party but must be self-enforcing for it to be effective. We adapt the standard repeated game model of self-enforcing implicit contracts (Bull, 1987) to study the interaction between a government and foreign investors in the absence of the rule of law. We first consider the case where there is a single location for investment. This addresses the issue of

whether a country that has no rule of law can in principle draw foreign investors. We then consider the case with competition between two locations, and this addresses the issue of where foreign investors would be more likely to go within such a country.

Consider a particular location where the government and a foreign investor play an infinitely repeated game. Each period, the investor has exactly one dollar to invest. Let α be the reservation net after-tax return to investment, below which she will choose to invest in somewhere else. Consider a location where the gross return to investment is $1+\alpha+i$, where i may or may not be positive and measures the location's relative ability to generate high return to investment. With a slight abuse of notation, we use i to indicate this location. Its government can tax investors every period, and receive a tax revenue. All the revenue is consumed by the government in the period.

In the stage game, the government announces a tax rate t_i on every dollar of investment, then an investor decides whether and how much to invest. After the gross return is generated, the government can honor or renege on the announced tax rate. We treat the government's announced tax rate as a contract with investors and consider a trigger strategy equilibrium for the repeated game. If the government reneges on the contract, the investor who has invested in the location will no longer invest in the location in the future periods. Thus, if the government chooses to renege, it will choose to seize all the gross return from the investor, and will receive no tax revenue from the investor every period after reneging. If the government honors the announced tax rate, it receives t_i from the investor for the period. The stage game is repeated in the absence of deviation by the government, and any deviation leads to a reversion to the perpetual play of the stage game equilibrium, i.e., no investment.

Let δ be the discount factor. The smaller the discount factor, the less patient the government is. The government will choose to honor its promised tax rate t_i if and only if

$$\frac{t_i}{1-\delta} \geq 1+\alpha+i. \quad (1)$$

That is, a credible, self-enforcing tax rate must be such that $t_i \geq (1-\delta)(1+\alpha+i)$. This shows that a government's promise of too low a tax rate is not credible. On the other hand, to attract investors, the tax rate, if self-enforcing, cannot be too high. Given a self-enforcing tax rate, an investor would invest in location *i* if its net after-tax return $\alpha + i - t_i \geq \alpha$, i.e., if

$$t_i \leq i. \quad (2)$$

For the above two inequalities to hold, it is necessary that $i \geq (1-\delta)(1+\alpha+i)$. After rearrangement, this becomes

$$i \geq \left(\frac{1}{\delta} - 1\right)(1+\alpha). \quad (3)$$

This condition is more likely to hold when the common discount factor is high, which means the government cares very much about the future, the location has a high ability to generate a return to investment, and the after-tax investment return elsewhere is low. In other words, if the government sufficiently cares about its reputation and if the location has good economic fundamentals such as good infrastructure, it may be able to commit to a tax rate that is attractive to investors and in the meantime the government finds it worthwhile to honor.

Note that it is better to have the rule of law because in that case, $i \geq 0$ is sufficient to attract investment. However, the above analysis shows that when condition (3) is satisfied, investment can still come even in the absence of it. In this sense, economic fundamentals are more important for foreign investment in an economy that does not have the rule of law than an economy that does, a point that is consistent with the findings of Fan et al. (2009) that

institutions are no longer robustly related to FDI once the analysis controls for the economic record of a country.

Now we consider the case with two locations competing for the investor's money. If only one location satisfies condition (3), then this location will be able to attract investors. If both locations satisfy condition (3), then which location would an investor choose to invest? It depends on both the tax rate and the pre-tax return on investment at each location. Suppose that *i* is *p* at location *p* and *r* at location *r*, and that r ≥ p. In other words, location *r* (the rich location) has economic advantages over location *p* (the poor location) that help investors generate higher returns to investment.

For the government of location *p*, the lowest level of self-enforcing tax rate is $t'_p = (1-\delta)(1+\alpha+p)$. Any tax rate less than this is not credible. Let the chosen tax rate by government p be t_p. An investor's net after-tax return at the location is $\alpha + p - t_p$. Location *r* can choose a tax rate that is slightly less than $t_r = t_p + (r-p)$. Given that t_p is self-enforcing, it is easily shown that t_r is also self-enforcing. It is a Nash equilibrium that $t_p = t'_p$, $t_r = t'_p + (r-p)$, and the investor chooses to invest in location *r*. Location *p* cannot beat the competition from location *r* by offering a much lower tax rate because such a tax rate would not be credible.

Note that the investor actually chooses to invest in a location that has a higher tax rate, which is also economically advantageous. This seems counter-intuitive. To better understand the relationship between the tax rate and investment, it is useful to compare the cases with and without the rule of law, and ask whether, other things being the same, lowering the tax rate can attract more investment in both cases.

Suppose r = p = i, that is, both locations have the same economic fundamentals. If there is the rule of law in both locations, then the local governments can commit to any tax rate. In our

model's setup, both locations in equilibrium will set $t = 0$. If a location for whatever rational or irrational reason plays an off-equilibrium strategy and sets a lower tax rate (for example, giving a subsidy to the investor), then this location will be able to attract the investment; and if it charges a higher tax rate, it will not be able to attract the investment. In other words, if there is the rule of law, then *ceteris paribus*, there is an inverse relationship between the tax rate and investment. In contrast, when both locations have no rule of law, the equilibrium tax rate would be the lowest self-enforcing rate $t = (1 - \delta)(1 + \alpha + i)$. If one of the locations charges a lower off-equilibrium tax rate, this location will not attract the investment because the lower rate is not credible. On the other hand, if it charges a higher tax rate, it will not attract the investment either. Hence, in this world of no rule of law, FDI does not respond to tax rates monotonically.

To summarize, our theoretical analysis implies three predictions. First, when a place has sufficiently good economic fundamentals (i.e., factors contributing to a higher rate of return on investment), it can attract FDI, and that the place that has better economic fundamentals can attract more investment. Second, in the absence of the rule of law, there is no relationship between the tax rate and investment. Finally, the model implies that if the leadership of a location sufficiently cares about its reputation among investors or certain characteristics make it appear persuasive and credible, then the location may be able to attract more investment.

3. Data, Variables and Hypotheses

3.1 The Data Set

The data set we use is the World-Bank-NBS Survey on 120 Chinese cities of 12,000 firms between 2002 and 2004. In the data, all provinces in China are covered except Tibet.[4] For each province, the capital city is selected, and if the province is not too small (by China's standard), other cities are also selected. Typically, provinces with high total GDP are allowed to survey more cities. In each province, top cities (as measured by either total GDP or total industrial output) are selected. For all but four cities, we sample 100 firms; for the four mega cities (Beijing, Tianjin, Shanghai, and Chongqing), we sample 200 firms. Thus, we have 12,400 sample firms in total. See Table A1 for a complete list of provinces and cities. All firms are from manufacturing. For each city, the top 10 manufacturing industries in terms of sales revenue are drawn. For each industry, all firms in the sample universe are divided into large, middle and small firms, each accounting for 1/3 of total industry revenue. Then from each of three types of firms, an equal number of firms are drawn. Firms are required to have a minimum of 10 employees. The distribution of our sample industries is displayed in Table A.2.

The survey has three main parts. The first part was sent to the senior managers of a firm, covering topics related to basic firm characteristics, bottlenecks to firms' growth, relationship with clients and suppliers, labor, infrastructure, trade, finance, corporate governance and relationship with the government. The second part was sent to the accounts and personnel officers, concerning topics on ownership composition, financial statements and labor statistics. The last part is answered at the city level, covering basic characteristics of the city that a firm is located.

[4] Tibet is not selected because there are insufficient number of firms. In conventional firm surveys conducted by NBS, Tibet is often not selected due to high survey costs.

Our unit of analysis is a district under a city administration. A district in China tends to be quite large—typically a large city has around 10 districts or counties, and a district can have as many as a million people, and there can be large variations in economic conditions and even the quality of government services within the same city. The sample we use for the final analysis includes slightly more than 900 districts.

3.2 Variables and Hypotheses

We adopt the following specification:

$$\mathrm{FDI_i} = \beta_0 + \beta_1 \mathrm{FIRM_i} + \beta_2 \mathrm{CONVNETIONAL_i} + \beta_3 \mathrm{INSTITUTIONAL_i} + \beta_4 \mathrm{TAX_i} + \beta_5 \mathrm{LEADER_i} + \varepsilon_{i.} \quad (4)$$

Our dependent variable is the extent of FDI in a district, measured by the share of foreign ownership in a firm averaged at the district level. Since our dependent variable is a censored at zero and one, we employ the Tobit specification to take into consideration of censoring at both tails. Figure 1 shows the kernel density graph of district foreign ownership, which is heavily concentrated between zero and 20 percent, with a thin distribution at the 20 percent and more range.

All the variables at the district level are computed based on the sample average for the firms in the district.[5] Table 1 contains the definitions of the variables in our analysis. We divide the independent variables into several groups. The first group FIRM includes two control variables: the district-level average of firm size (log of the number of employees) and that of the log of firm age.

[5] When the number of observations for a district is too small (less than 6 firms), we use the city-average to replace the district average.

The second group CONVENTIONAL consists of a number of conventional economic factors that affect business costs and market opportunities faced by foreign investors. Most of these factors have been routinely used in the literature, and they affect the rate of return to investment (i.e., *i* in our model) and hence should affect FDI. One such factor is a locality's income level, measured by the log of per capita GDP at the city level. It is a proxy for local market opportunity for foreign invested firms. A location that has higher income is a potential market for relatively high end products by these firms. Other factors include (i) a geographical variable measured by the log of the city's distance to the closest port (in kilometers) plus one, (ii) the quality of infrastructure as measured by the log of the city's telephone density, (iii) the labor cost measured by the log of the city-level average wage, and (iv) the skill level of a location proxied by the district average of the share of employees that are college-educated.

We also include in this group a quality of life variable as measured by the number of good air days according to the local environmental protection bureau. [6] The impact of the quality of living on FDI is a factor that has not previously been studied. Since the inflow of foreign capital is almost always accompanied by the movement of foreign personnel to the new locality, it is natural that these investors would pick a location in which the quality of living is better, ceteris paribus, to improve on-the-job consumption and to reduce payment for hardship allowance.

The third group INSTITUTIONAL consists of regulatory or institutional factors that affect the cost and opportunity for a foreign investor to do business in a particular location. The first factor we consider is whether a locality is designated as an 'open city'. In two waves of opening-up reform, in the 1980s, a number of cities were designated by the central government either as a 'special economic zone' or an 'open coastal city' (Litwack and Qian 1998; Coughlin

[6] The environmental bureaus do use the common technical standards in judging air quality.

and Segev, 2000; Chen et al., 2011). In 1980 the central government designated four cities, Shenzhen, Zhuhai, Shantou and Xiamen, to be the special economic zones. A few years later, another 14 cities were designated as 'open coastal cities'. These cities were granted special policy advantages in attracting FDI, which meant fewer restrictions on FDI and some tax concessions from the central government. During our sample period, the policy differentials across Chinese cities became much smaller. However, there may still be path-dependence effects or some policy advantages enjoyed by these open cities.

The second institutional variable is custom efficiency, as proxied by the log of the district average number of days for export to pass customs plus the district average number of days for import to pass customs.[7] As a measure of the efficiency of bureaucracy, it should be negatively correlated with FDI inflows. The third variable, the share of domestic private firms in a district with access to bank loans, reflects the maturity of a locality's financial institutions. If domestic private firms have good access to finance, particularly bank loans, the need for foreign direct investment might be lower (Huang and Di, 2004; Huang, 2007). Moreover, due to diminishing returns to capital, the return to foreign direct investment should be lower in a locality with relatively more abundant capital.

The fourth institutional factor we consider is the cost of maintaining *guanxi* (relationship) with the relevant government officials and departments. In China, maintaining *guanxi* means dining and wining, and it is costly. We therefore expect this cost to have a negative impact on FDI. The ratio of entertainment and travel costs (ETC) to sales is used as a proxy for the cost of *guanxi*. ETC is an expenditure item in standard accounting books of firms in China, and it is a large sum, amounting to about 20% of the total wage bills in the sample firms of the investment climate survey of the World Bank. Cai, Fang and Xu (forthcoming) find strong evidence that

[7] The two components are closely correlated. We bundle them together to avoid multicollinearity.

ETC likely includes expenditures on government officials both as 'grease money' and 'protection money', expenditures to build relationship with suppliers and clients, and private managerial consumption. We include both the district average of private firms' ETC and the district average of foreign firms' advantage in ETC, which is constructed as the district average ETC burden for domestic private firms over district average ETC burden for foreign firms minus one.

The fifth institutional factor is the perception of the contractual rights protection, and it is measure of what Acemouglu et al. (2005) refers to as 'contracting institutions'. Our data set contains information on the perception by firm managers on the effectiveness of protection of contractual and property rights in the event of commercial disputes. It is based on the answer to the following question: 'Among all the commercial or other disputes related to your company, what is the likelihood that your legal contracts or property rights are protected.' This question reflects partly the perceived quality of the legal system in protecting contractual and property rights, and partly the services provided by the government because the government may also be involved in settling some of the disputes. Again, we consider both the average response by the domestic private firms and the advantage in contract enforcement enjoyed by foreign invested firms in a district,[8] which is constructed as the district average perception of property rights protection foreign invested firms over that for domestic private firms.

A good 'contracting institution' should in principle reduce transaction costs among businesses and lower the associated risks. Lacking the rule of law, however, China as a whole apparently does not have a good contracting institution. But this does not make contracts useless. Just like the 'contract' we modeled between the government and an investor, contracts between business firms can also rely on self-enforcement instead of third party enforcement. The actual

[8] Again, when the number of observations within the district cell is too small, the city average is used instead.

occurrence of a commercial dispute going to the court is an off-equilibrium event, and should be relatively infrequent in comparison with the number of commercial dealings. Therefore, even if there can be variations across cities and districts in the perception of contracting institution in the rare event of such disputes, the reality is that such a perception should not be a significant factor in determining whether and where a foreign firm will invest in China where most contracts between businesses rely on self-enforcement.

Our model predicts that there is no relationship between the tax rate and FDI, and we therefore include in the regression two TAX variables to test this hypothesis: one is the district average of domestic private firms' tax burdens, and the other is the district average foreign advantage in tax burdens, which is constructed as the district average tax burden for domestic private firms over district average tax burden for foreign firms minus one. The tax burden at the firm level is the summation of all types of taxes paid by the firm over its sales.

The last group of variables, LEADER, consists of certain characteristics of local government leaders. In a country where there is no rule of law, there is the rule of man. In our model, if the government leader has a long horizon and hence cares about his or her reputation for being investor friendly, or if the leader pursues investors hard and is a persuasive and credible communicator, then it is more likely that he or she may be able to attract more investment. Presumably, a leader who is better educated, young and more likely to be promoted is more likely to fit the above profile.

Whether leadership matters in economic growth and development has been hotly debated among generations of thinkers (Jones and Olken, 2005). At one extreme there are people who argue that national leaders merely proxy the will of the people or the underlying economic forces. At the other extreme, there is the 'great man theory' of history, which argues that history is

largely determined by random events and the will of the great men. Taking the debate to data, Jones and Olken (2005) find that national leader quality has a strong causal effect on growth, especially in autocratic countries. In a related paper, Li and Zhou (2005) find that provincial leader incentives are closely related to local economic performance.

Our leadership variables include leader tenure, leader cohorts and their interaction terms. The leaders are the cities' party secretaries (PSs), and in China, they are the top executives and power-holders.[9] We classify PSs into three cohorts, (relatively) young, middle-aged, and old, with the top and bottom defined to be below the 25 percentile and above 75 percentile in age distribution. The cutoff thresholds happen to be 47 years and 53 years old, which more or less partitioned PSs into those being educated before, during and after the Cultural Revolution. Presumably, those who were educated during the Cultural Revolution period—a period featuring frequent and/or complete shutdown of schools--had the worst education. We thus expect the PSs who were educated before and after Cultural Revolution to be better at attracting FDI. In China, a cadre who has the faster promotion is often the one who has had relatively shorter stints in more positions. Hence we expect a PS who has a shorter expected tenure at his or her position and hence better promotion prospect to have a longer time horizon and cares more about his or her reputation with the foreign investors. In a city where the previous PSs have been promoted relatively quickly, it is likely that the city is a place used by the upper level government as a training and test ground for promising cadres. Thus, the current PS of the city may expect a shorter tenure and faster promotion after showing some achievement. We measure the PS's expected tenure as the average of the latest three PSs. The expected tenure effect may vary with the age of a PS. A younger PS would presumably have a stronger career concern and care more about his or her reputation. Therefore, we may expect that the tenure effect to be more

[9] Mayors are actually the second most important job in terms of political power (see McGregor 2010).

pronounced for younger PSs than for the older ones. We use the interaction term of the tenure variable and the cohort dummy variable to test for the differential effect.

4. Regression Results

While some of our key variables are measured at the more disaggregated district level, some others are at the city level. This introduces the possibility that the observations are not independent across districts of the same city. To contain the potential exaggeration of estimation precision, we cluster the standard errors at the city level (Moulton, 1990).

In column (1) of Table 3, we present the district-level analysis the determinants of foreign ownership. In column (2) we present the marginal effect of the explanatory variable on foreign ownership conditional on that it is positive and non-censored. In column (3) we add city GDP growth rate and another proxy of infrastructure, the district average of the loss of sales due to electricity outage. Since the qualitative results tend to be similar, we shall focus on the results in column (1).

FDI is higher in cities with higher per capita GDP; however, it is not statistically significant. A longer distance to the nearest port is weakly associated with a smaller share of district foreign ownership. This is to be expected: locations with a higher transportation cost are less attractive to foreign investors. Unsurprisingly, phone density is positively associated with FDI entry. Increasing phone density by one SD would increase average foreign ownership by 1 percentage points, or 9 percent.

Interestingly, the average wage cost is not significantly correlated with FDI. This is perhaps because it is simultaneously a measure of costs and of productivity, and, thus, its sign is hard to pin down ex ante. Indeed, the variable capturing skills of labor force, the district average

share of college graduates in labor force is positive and significant. The implied magnitude, however, is quite small: a one-SD increase in this variable would increase foreign ownership by only 0.3 percentage points or 2 percent at the mean.

Investors do seem to care about the quality of living when they decide on investment site. The share of days with good quality air is positively and significantly associated with district foreign ownership. Increasing this by one SD would increase foreign ownership by 1 percentage point, or 8 percent at the mean. This number is significant enough to be noticed, but not overwhelmingly important, consistent with our feeling that the quality of living is an important, but nevertheless not a dominant concern for international investors.

In summary, the conventional economic factors mostly have the expected effect on FDI inflows. We now turn to the effects of regulatory and institutional factors.

Firms located in an 'open city' attract significantly more FDI, suggesting that government policies matter in attracting investment. The magnitude is also large. Relative to a city that is not designated as an 'open city', a district located in an 'open city' would feature a foreign ownership that is 3.2 percentage points (or 27%) higher.

The efficiency of bureaucracy matters too. Apparently, fewer days to pass customs would reduce the costs of exporting goods and importing goods, and increase an FDI firm's competitiveness in the market. Indeed, reducing custom days by one standard deviation (SD) would increase district ownership by 3.3 percent points, or 28 percent at the mean foreign ownership. Thus, custom efficiency proves to be an important factor in attracting FDI inflow.

The development of financial market is an important determinant of foreign ownership. The share of private firms in the district with access to loans is negatively and significantly correlated with district foreign ownership. Reducing access to loan by domestic private firms by

one SD (0.21) would increase district average foreign ownership by 1 percentage point, or 8 percent at the mean. This finding is consistent with the idea that part of the reasons for FDI inflow is to use foreign capital to replace domestic capital for local development when local financial market is poorly developed and access to capital is difficult by domestic private investors (Huang, 2007).

The cost of maintaining guanxi has a negative impact on FDI. While the average level of ETC, the share of entertainment and traveling costs over sales, for domestic private firms does not affect FDI, foreign advantage in ETC is associated with a higher FDI level. Thus, districts in which foreign firms do not have to spend too much on *guanxi* with government attract more foreign investment. Increasing the ETC advantage for foreign firms by one SD (1.08) is associated with an increase in district average foreign ownership by 1.2 percentage points, or 10 percent at the mean of foreign ownership.

As predicted, the managerial perception of the legal protection of contractual rights by domestic firms and the advantage in legal contract enforcement enjoyed by foreign invested firms do not matter for FDI. This result is consistent not only with the spirit of our theoretical analysis, but also with Acemoglu and Johnson's (2005) finding that contracting institutions do not have a first-order importance in economic growth.

Next we turn to the two hypotheses that are unique to our model, namely the effect of the tax rate and leadership characteristics on FDI. First, the empirical result indeed confirms our theoretical prediction that tax policies are not significantly associated with FDI inflows. Neither district average of tax burdens for private firms nor the tax advantage of foreign firms has any statistically significant effect on FDI.

Second, local leadership variables also have expected effects. Specifically, the age profile of the party secretary is significantly related to FDI. Younger PSs are associated with a 'premium' in FDI level by 2.2 percentage points,[10] or 18 percent of the mean FDI level. Older PSs are associated with a premium in FDI by 5.3 percentage points, or 43 percent of the mean level. These effects are remarkably large. The PSs at the middle-range age graduated from high school roughly between 1969 and 1975, the main part of the Cultural Revolution period when education was particularly bad. It is not surprising that the relatively young and old PSs tend to do a better job than the middle-aged ones. Moreover, the effect of the average tenure of the party secretaries is also consistent with our hypothesis. For both relatively young and old PSs, a shorter average tenure is associated with a higher FDI level, but only the interaction term of young PS with log(average PS tenure) is statistically significant. The fact that the tenure effect is especially pronounced for young PSs is consistent with the idea that young leaders have a longer career and stronger concern for their reputation.

We have examined the robustness of our results with several alternative specifications. We have tried adding more controls in the regressions. In particular, we have tried adding GDP growth rate for the city and the district-average share of sales lost due to electricity outage (column 2 in Table 3), the logarithm of city population (tried but unreported), and they are largely statistically insignificant. Our key results remain intact.

One concern is that measuring FDI in terms of average foreign ownership for firms in a region is not standard--the standard way is FDI per capita. We do not have this measure at the district level, so we cannot directly test whether our results would remain robust if we measure FDI by FDI per capita. We do, however, have city-level FDI per capita. The correlation

[10] That is, 0.082-0.060*1.02.

coefficient of city FDI per capita and district average foreign ownership is high: 0.44. This should relieve our concern.

Another concern is that the district average foreign ownership is a simple average, which may lead to misleading results if not weighted by firm size. To address this concern, we construct the district average foreign ownership using firm size (i.e., the number of employees) as weight. The weighted foreign ownership is closely correlated with the simple average, with a correlation coefficient of 0.88. Table 4 reports the district level regression corresponding to column (1) of Table 3 but using employment size-weighted foreign share ownership of firms in a district as the dependent variable. The qualitative results are, not surprisingly, very similar.

5. Concluding Remarks

In this paper, we have tried to show that the rule of law is not necessary for a country to attract FDI. In a self-enforcing contract model, we demonstrate that good economic fundamentals can attract FDI inflows in the absence of the rule of law. In fact, they are more important for a country without the rule of law than for countries with it. The model shows that in such a country, a locality can attract more investment by improving economic fundamentals, but not by simply lowering tax rates. The model also implies that a government leader who has a longer-term career horizon and cares about his or her reputation may be able to attract more investment. Our empirical evidence based on data from Chinese cities is largely consistent with the model's predictions.

Our paper echoes a number of recent papers that have questioned the fundamental importance of the rule of law in economic growth (Qian, 1999; Glaeser et al., 2004; Rodrik, 2004; Allen, Qian and Qian, 2005; Fan et al., 2009). As we read them, these papers all argue or imply

that the formal rule of law and institutional constraints on government are not always necessary for economic growth in a developing or transitional economy. In particularly, using a cross-country panel data, Fan et al. (2009) find that FDI per capita is not robustly related to the rule of law once the analysis controls for a country's economic track record and its volatility. Their similar findings based on cross-country panel data that are completely different from our within-country, cross-sectional regional data add to our confidence about the key results in the current paper.

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Figure 1. Density Graph of District Average of Foreign Ownership

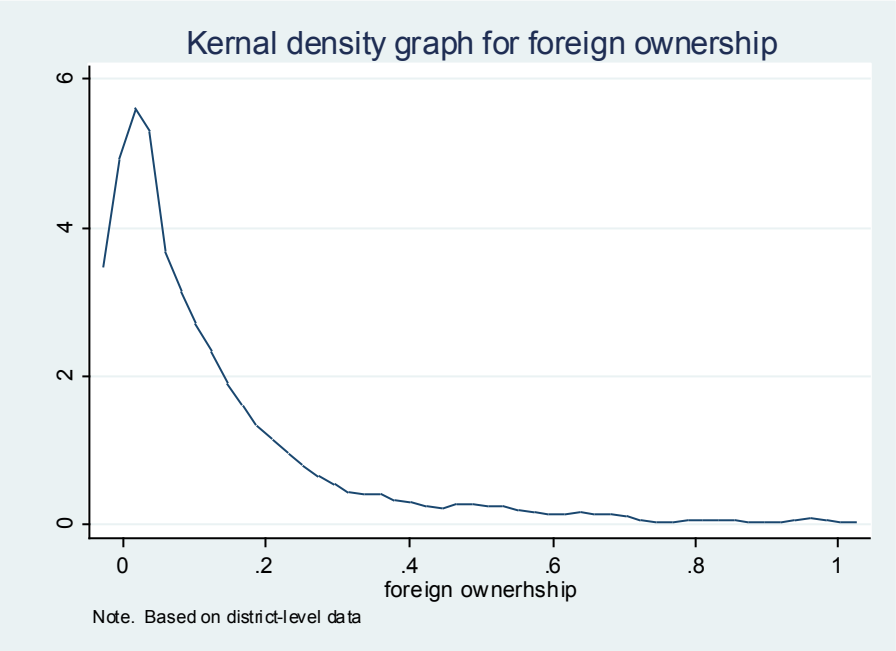

Table 1. Definitions of Key Variables

	Definitions
FDI	share of foreign ownership in a firm averaged at the district level
ln(L)	Ln(district average of the number of employees in a firm)
ln(firm age)	Ln(district average of firm age)
ln(GDP PC)	Ln(city-level GDP per capita evaluated at 2004 Yuan)
ln(city distance to port +1)	Ln(City's distance to the port+1)
City phone density	City level average number of phones per 100 people.
ln(city average wage)	Ln(city-level average wage per employee based on city survey), wage evaluated at 2004 Yuan.
district average share of college graduate in L	District-level share of employees with college or above education.
City share of good air days	Share of days in the city that the quality of air reaches a specified threshold (to be judged as good or ok).
dummy: open city	Dummy of initial open cities, including Shenzhen, Zhuhai, Shantou and Xiamen.
ln(days passing customs)	Ln(district-level average of the number of days for import to pass customs plus the number of days for export to clear customs).
dist avg of private firm access to loans	The average share of private firms with access to loans within the district. A firm is defined to have access to loans if it has borrowed bank loans in the past three years.
dist avg of private firm ETC	The average ETC burden of domestic private firms within the district. ETC burden is a firm's expenditure on entertainment and traveling over sales.
dist avg of foreign advantage in ETC	District average ETC burden for domestic private firms over district average ETC burden for foreign firms minus one.
dist avg of private firm contract enforcement	The average of the perception of domestic private firms on the protection of contractual rights within the district. A firm's perception is based on the firm's answer to the following question: for commercial and other disputes that your firm has had, what is the likelihood that the company's legal contractual and property rights is protected? The answer lies between 0% to 100%.
dist avg of foreign advantage in contract enforcement	District average perception of contractual rights protection for foreign firms over that for domestic firms.
dist avg of private firm tax burdens	The average tax burden of domestic private firms within the district. Tax burden is defined as the summation of all types of taxes divided by sales.
dist avg of foreign advantage in tax burdens	District average tax burden for domestic private firms over district average tax burden for foreign firms minus one.
PSyoung	A dummy variable indicating that the age of the party secretary is younger than 47 years old (25 percentile)
PSold	A dummy variable indicating that the age of the party secretary is older than 53 years old (75 percentile)
PS tenure	Average job tenure for the recent three party secretaries (in years)

Table 2. Summary Statistics of Key Variables, Aggregated at the District level

	Mean	s.d.	minimum	median	maximum
FDI	0.120	0.170	0.000	0.061	1.000
ln(L)	5.585	0.754	3.017	5.566	7.932
ln (firm age)	2.276	0.366	1.298	2.251	3.929
ln(GDP PC)	8.929	0.625	7.517	8.921	10.510
ln(city distance to port +1)	4.846	2.215	0.000	5.583	8.313
City phone density	3.975	0.647	2.407	3.965	5.455
ln(city avg wage)	9.554	0.302	8.792	9.532	10. 371
district average share of college graduate in L	0.174	0.086	0.029	0.159	0.671
city share of good air days	0.815	0.155	0.265	0.836	1.000
dummy: open city	0.115	0.319	0.000	0.000	1.000
ln(dist. avg of days passing customs)	2.501	0.456	0.928	2.510	4.071
dist avg of private firm access to loans	0.603	0.213	0.000	0.615	1.000
dist avg of private firm ETC burdens	0.013	0.008	0.001	0.010	0.069
dist avg of foreign advantage in ETC	0.427	1.081	-0.927	0.169	8.577
dist avg of private firm contract enforcement	0.645	0.199	0.000	0.687	1.000
dist avg of foreign advantage in contract enforcement	1.073	0.436	0.000	1.005	5.662
dist avg of private firm tax burdens	0.048	0.019	0.006	0.046	0.169
dist avg of foreign advantage in tax burden	0.169	0.742	-0.850	0.040	8.155
average PS tenure	2.942	0.977	1.000	3.000	5.667
ln(average PS tenure)	1.017	0.369	0.000	1.099	1.735
PSyoung	0.262	0.440	0.000	0.000	1.000
PSold	0.236	0.425	0.000	0.000	1.000
ln(average PS tenure)*PSyoung	0.242	0.458	0.000	0.000	1.609
ln(average PS tenure)*PSmiddle	0.513	0.563	0.000	0.000	1.735
ln(average PS tenure)*PSOld	0.262	0.504	0.000	0.000	1.609
Full foreign ownership	0.069	0.143	0.000	0.000	1.000

Note. The statistics are at the district-level. The number of observations range from 909 to 916.

Table 3. Determinants of FDI at the District Level

	(1)	marginal effects	(2)
ln(L)	0.030***	0.015	0.031***
	(2.607)		(2.628)
ln(firm age)	-0.089***	-0.043	-0.088***
	(-4.638)		(-4.507)
ln(GDP PC)	0.042	0.02	0.041
	(1.453)		(1.480)
ln(city distance to port +1)	-0.007	-0.003	-0.007
	(-1.531)		(-1.611)
city phone density	0.032*	0.016	0.035*
	(1.830)		(1.959)
ln(city avg wage)	0.006	0.003	-0.003
	(0.136)		(-0.062)
dist.avg share of coll grad in L	0.243***	0.118	0.261***
	(3.171)		(3.433)
city share of good air days	0.129*	0.062	0.123*
	(1.911)		(1.828)
dummy: open city	0.061*	0.032	0.056*
	(1.828)		(1.654)
ln(dist.avg of days passing customs)	-0.148***	-0.072	-0.153***
	(-5.365)		(-5.377)
dist avg of priv firm access to loans	-0.100***	-0.048	-0.110***
	(-2.726)		(-2.889)
dist avg of priv firm ETC	0.452	0.219	0.331
	(0.372)		(0.279)
dist avg of foreign advantage in ETC	0.022***	0.011	0.022***
	(3.281)		(3.328)
dist avg of priv firm contract enforcement	0.037	0.018	0.038
	(0.688)		(0.716)
dist avg of foreign advantage in contract enforcement	-0.006	-0.003	-0.006
	(-0.259)		(-0.272)
dist avg of priv firm tax burdens	-0.647	-0.313	-0.677
	(-1.270)		(-1.367)
dist avg of foreign advantage in tax burden	0.021	0.01	0.021
	(1.097)		(1.116)
party secretary young	0.150**	0.082	0.155***
	(2.513)		(2.607)
party secretary old	0.174**	0.099	0.175**
	(2.066)		(2.099)
PS young*ln(avg PS tenure)	-0.124***	-0.06	-0.124***
	(-2.706)		(-2.657)
PS midde*ln(avg PS tenure)	0.027	0.013	0.030
	(0.922)		(1.013)
PS old*ln(avg PS tenure)	-0.095	-0.046	-0.091
	(-1.489)		(-1.434)
GDP growth rate, city			-0.000
			(-0.371)
dist avg of share of loss of sales due to elec. outage			0.272
			(1.259)
Observations	909		909

Note. The standard errors are clustered at the city level. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. For marginal effects, the magnitude reported concerns about a change from 0 to 1 for a dummy explanatory variable, and dY/dx conditional on Y not being censored.

Table 4. Determinants of FDI at the District Level: Dependent Variable = Foreign Ownership Weighted by Firm Size

	(1)
ln(L)	0.022
	(1.542)
ln(firm age)	-0.121***
	(-4.783)
ln(GDP PC)	0.053
	(1.597)
ln(city distance to port +1)	-0.008
	(-1.391)
city phone density	0.045*
	(1.891)
ln(city avg wage)	-0.018
	(-0.330)
dist.avg share of coll grad in L	0.164
	(1.554)
city share of good air days	0.159*
	(1.893)
dummy: open city	0.095**
	(2.098)
ln(dist.avg of days passing customs)	-0.170***
	(-4.549)
dist avg of priv firm access to loans	-0.141***
	(-3.029)
dist avg of priv firm ETC	-0.602
	(-0.417)
dist avg of foreign advantage in ETC	0.034***
	(3.594)
dist avg of priv firm contract enforcement	-0.020
	(-0.325)
dist avg of foreign advantage in contract enforcement	-0.011
	(-0.441)
dist avg of priv firm tax burdens	-0.611
	(-0.871)
dist avg of foreign advantage in tax burden	0.024
	(0.904)
party secretary young	0.154**
	(2.085)
party secretary old	0.150
	(1.437)
PS young*ln(avg PS tenure)	-0.145***
	(-2.611)
PS middle*ln(avg PS tenure)	0.017
	(0.393)
PS old*ln(avg PS tenure)	-0.086
	(-1.093)
Observations	909
R-squared	

Note. The standard errors are clustered at the city level. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels.

Table A.1. The provinces and cities of our sample

Province	City	Province	City	Province	City
Anhui	Anqing	Henan	Luoyang	Neimenggu	Baotou
	Chuzhou		Nanyang		Huhehaote
	Hefei		Shangqiu	Ningxia	Wuzhong
	Wuhu		Xinxiang		Yinchuan
Beijing	Beijing		Xuchang	Qinghai	Xining
Chongqing	Chongqing		Zhengzhou	Shaanxi	Baoji
Fujian	Fuzhou		Zhoukou		Xian
	Quanzhou	Hubei	Huanggang		Xianyang
	Sanming		Jingmen	Shandong	Jinan
	Xiamen		Jingzhou		Jining
	Zhangzhou		Wuhan		Linyi
Gansu	Lanzhou		Xiangfan		Qingdao
	Tianshui		Xiaogan		Taian
Guangdong	Dongguan		Yichang		Weifang
	Foshan	Hunan	Changde		Weihai
	Guangzhou		Changsha		Yantai
	Huizhou		Chenzhou		Zibo
	Jiangmen		Hengyang	Shanghai	Shanghai
	Maoming		Yueyang	Shanxi	Datong
	Shantou		Zhuzhou		Taiyuan
	Shenzhen	Jiangsu	Changzhou		Yuncheng
	Zhuhai		Lianyungang	Sichuan	Chengdu
Guangxi	Guilin		Nanjing		Deyang
	Liuzhou		Nantong		Leshan
	Nanning		Suzhou		Mianyang
Guizhou	Guiyang		Wuxi		Yibin
	Zunyi		Xuzhou	Tianjin	Tianjin
Hainan	Haikou		Yancheng	Xinjiang	Wulumuqi
Hebei	Baoding		Yangzhou	Yunnan	Kunming
	Cangzhou	Jiangxi	Ganzhou		Qujing
	Handan		Jiujiang		Yuxi
	Langfang		Nanchang	Zhejiang	Hangzhou
	Qinhuangdao		Shangrao		Huzhou
	Shijiazhuang		Yichun		Jiaxing
	Tangshan	Jilin	Changchun		Jinhua
	Zhangjiakou		Jilin		Ningbo
Heilongjiang	Daqing	Liaoning	Anshan		Shaoxing
	Haerbing		Benxi		Taizhou
	Qiqihaer		Dalian		Wenzhou
			Fushun		
			Jinzhou		
			Shenyang		

Table A.2. The distribution of sampling firms by 2-digit industries

	Freq.	Percent
Agricultural products and food processing	969	7.81
Food	243	1.96
Beverage	178	1.44
Tobacco	46	0.37
Textile	952	7.68
Clothing, shoe, hat	206	1.66
Leather, hide and feather products	139	1.12
Timber processing and related products	141	1.14
Furniture	55	0.44
Paper and paper products	235	1.9
Printing and recording media	62	0.5
Cultural and athletic products	41	0.33
Petroleum processing	182	1.47
Chemical material and chemical products	1,441	11.62
Medicine	426	3.44
Chemical fiber	47	0.38
Rubber	21	0.17
Plastic products	329	2.65
Non-metal mineral processing	1,299	10.48
Pressing ferrous	491	3.96
Pressing of non-ferrous	345	2.78
Metal products	366	2.95
General machinery	1,077	8.69
Specific equipment	486	3.92
Transportation equipment	989	7.98
Electric equipment	864	6.97
Communication equipment, computer and other electronic equipment	598	4.82
Instruments	60	0.48
Art crafts	109	0.88
Garbage disposal and recycling	3	0.02
Total	12,400	100